

books. I have consulted the original paper in *Mémoires de l'Académie Royale des Sciences*, Paris, 1777, p. 318. Du Séjour states that the longest totality will occur at noon on the equator on July 2, with the Sun at apogee. The following data are used by him. Sun's semi-diameter, $15' 42''$; hourly motion in the ecliptic, $2' 23''$; declination, $22^\circ 50' N$. The Moon is near her ascending node, in S. latitude $23' 57''$; hourly motion, reduced to the ecliptic, $38' 16''$; greatest polar parallax, $61' 17''$.

He does not give the Moon's semi-diameter, nor the relation between the polar and the equatorial radius of the Earth. With the ratio at present accepted, a polar parallax of $61' 17''$ would yield an equatorial one of $61' 29''$. He does not refer to the conditions which (I presume) were imposed upon the Moon's parallax by the lunar theory of his time, nor does he appear to be aware that the maximum totality is not actually on the equator. Taking Du Séjour's elements, and assuming for the Moon an equatorial parallax of $61' 29''$, and using her smaller semi-diameter, I get a result practically agreeing with his for an eclipse on the equator. But it seems to me that the parallax is larger than the lunar theory will permit under the conditions, and also that the semi-diameter of the Sun is too small.

Lord Grimthorpe, in his *Astronomy without Mathematics*, writes (p. 151) that "under a combination of the most favourable conditions totality may last something more than 7 minutes." But he bases his calculation upon an umbra only 148 miles in diameter, and this is decidedly under the mark. He also assumes the perigee distance of the Moon to be 221,600 miles, and this corresponds to a parallax of about $61' 29''$. If my computations are correct, this parallax, like that used by Du Séjour, exceeds the value allowed by the lunar theory under the given conditions. In addition to contributing interesting data as to future eclipses, Mr. Crommelin has been good enough to read over the MS. of this paper.

Leeds: 1900 February.

Observations of Saturn made at Juvisy Observatory in 1899.
By C. Flammarion.

Observations of *Saturn* were commenced here during the last apparition on 1899 June 1, and continued till July 30. The number of fine nights was abnormally great, a circumstance which more than compensated for the low altitude of the planet above the southern horizon.

The instrument employed was the Juvisy $10\frac{1}{4}$ -inch equatorial, bearing powers of 224, 308, 411 and 617, and the observations were made by M. Antoniadi and myself.

1. *The Globe.*

The N. polar cap was not particularly dark in 1899, appearing certainly lighter than it did in 1895. No trace of the N. temperate band; but the double N. tropical belt was an obvious feature under almost every kind of definition.

The dark spots which sprinkle this belt, and especially its S. component, were missed here in 1899, though vague traces of some seem to have been caught on July 7 and 27.

Also, the equatorial zone did not show its ordinary "wool pack" structure, while the narrow equatorial belt was invisible.

An interesting "black drop" appearance, due to irradiation, was repeatedly detected in the shadow cast by the planet on the ring, there where it met the Cassini division.

2. *The Rings.*

(a) *Outer Ring, A.*—Encke's division was seen on one occasion only, on July 30, the best night of the season (Plate 12), when it was perfectly visible on both ansæ. An easier feature of Ring A was a series of dusky indentations emerging from the Cassini division. The outer edge of A was in no wise sharply defined, but seemed to shade off rather gently into space.

Cassini's division could be traced all round the Ring without difficulty, even under very poor seeing. It was not black, but dark grey. The division seemed tangent to *Saturn's* N. limb.

(b) *Inner Bright Ring, B.*—This Ring shaded into the "Crape" Ring without any intermediate separation. On July 30 B was split into two rings by the certain visibility, on both ansæ, of a narrow and faint dusky line as shown in the Plate.

(c) *The "Crape" Ring, C,* showed nothing abnormal, excepting, perhaps, an exaggerated concavity of its inner outline towards the centre, due probably to the interference of the S. equatorial belt of *Saturn*.

The eccentricity of the Ring, noted here every year since 1895, was re-observed in 1899. The eastern vicinity was still larger than the western, though the difference was certainly less marked than a few years ago.

*Juvisy Observatory (S.-et-O.), France,
1899 December 30.*

*Note on a Possible Occultation of A Geminorum by Venus,
1900 May 27-28. By Walter W. Bryant.*

At about 2^h 45^m A.M. May 28, Greenwich civil time (some hours before the eclipse), *Venus* will be in conjunction in R.A. with *A Geminorum*, a star of the fifth magnitude, whose place for the day is approximately 7^h 17^m 24^s.5, N. 25° 14' 30". The